TMF

September 1991

THE MAC FLYER - For Greater Safety in MAC Air Operations

MAC's helo world . . . page 16

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September 1991 MACSP 127-5 VOL XXXVIII NO. 9

page 16

page 25

FEATURES

3 **I Wish I Were A Safety Conscious Pilot**
Safety promoted in a different way.

5 **Feathered Flyers Are Forming Up**
Birdstrike news.

8 **Sometimes It Can't Be Helped**
Lack of communication and common sense result in mishap (in the air as well as on the ground).

13 **It Can't Happen To Me!**
Airfield problems are real.

15 **Explosives Safety Role In Contingency Airlift Of Hazardous Cargo**

16 **Old Meets New—The H-3 And The Space Shuttle**
Air Rescue in support of NASA.

19 **Pop**
Do you have one in your past?

22 **Realistic Training And Rejected Takeoffs**
Setting priorities.

25 **C. R. Terror**
Fuselage on the fairway.

DEPARTMENTS

10 **Mishap With A Moral**
14 **Flying-Hour Milestones**
28 **Quickstoppers**
31 **After Deadlines**

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NASA Photo (Courtesy TGS, Inc. and ESMC/PA)

I Wish I Were A Safety Conscious Pilot

By Capt. Michael A. Vinskey
337 MAS (AFRES)

I wish I were a safety conscious pilot.
That is what I truly would like to be.
For if I were a safety conscious pilot,
Everyone would want to fly with me.

Got a checkride due the end of this week.
Guess I should review some of my pubs.
Dust them off and sneak a little quick peek.
I'd do it if I just knew where they was.

Out all night and having such a good time.
So what if my alert's at six-o-three.
Once we're cruising, things I know will be fine.
With the autopilot I can bag some Zs.

Overslept and had no time for breakfast.
Grabbed a coke and candy at the bus.
Didn't buy a luscious tasting box lunch.
I'm starving, but we won't be done 'til dusk.

I took the pubs and dragged them to the airplane.
I knew I should have checked them from the start.
But Base Ops guys are always really thorough.
The chart I need is not the one I got.

Forgot to give a briefing to my aircrew.
I didn't really think it was that bad.
The fire forced us to egress the big bird.
How many people do we really have?

It's so much work to always do a fuel plan.
I'd been before and knew how much it took.
I can't believe we're burning gas this quickly.
And now I wish I'd planed it with the book.

Off into the blue without my checklist.
Stuff in there that I don't really need.
Couldn't get the gear down for a landing.
Now I wish I had that book to read.

Forgot to do a preflight of my o-two.
Climbing through the sky at twenty-three.
Started to get dizzy and hypoxic.
Glad the Co was watching out for me.

I had a cold and really shouldn't have flown.
But where we were we didn't want to stay.
With pain so great I couldn't wait to get home.
The Doc says I can't fly again 'til May.

1991 MAC FLIGHT SAFETY WRITING CONTEST THIRD PLACE

I never do a preflight in the morning.
That's a crewchief's job and not for me.
Wonder why I've got a fire warning.
Could there be some FOD in number three?

Forgot to check the NOTAMs and the weather.
Right here the sky looks blue and clear and fair.
Ahead it's black and dark as a crow's feather.
And now the TACAN's gone right off the air.

On approach and checking out the landscape.
I thought the checklist had been called complete.
I guess I missed the call to put the gear down.
Tower's screaming, "Go Around" to me.

Captain Vinskey, a 1979 AF Academy Graduate, attended UPT at Williams AFB AZ. Having flown C-130s at Little Rock AFB AR, and produced AQP videotapes at Norton AFB CA, Captain Vinskey is presently flying C-5s at Westover AFB MA.

The INS was programmed for the whole route.
I didn't check the distance or the track.
It's coast-in time and looking for a lock-on.
I should have checked the way-points way, way back.

Thought I'd let the Co practice his landings.
Shouldn't be as low as we do seem.
Hope he'll recognize this little problem.
We just plowed through the tops of some tall trees.

The spot was dark and we were in a hurry.
To taxi in I knew I risked a lot.
What the hell. We'll go ahead and park it.
I never saw the cart that wrecked my prop.

Off to war and didn't bring my chem gear.
The stuff's too hot and bulky anyway.
Who would think someone would try to gas us.
You say the guy's name's Saddam Hussein?

I love to drink and smoke and have a good time.
The booze and butts are really my good friends.
But people seldom want to be around me.
I hope I'm not approaching a dead end.

I wish I were a safety conscious pilot.
That is what I'd truly like to be.
For if I were a safety conscious pilot,
Everyone would want to fly with me. ★

Feathered Flyers Are Forming Up

Their annual fall flights are in the planning stage.

By Maj. Stephen E. Behr
Associate Editor

Flocks of migratory birds on the ground and indigenous birds in the pattern may be expected at most airports.

The above bit of wisdom is found as a flight hazard for several entries in FLIP General Planning. It applies to almost every airport and air base. Birds are attracted to airfields for the following reasons: food and water supplies roosting areas, resting and loafing areas (runways and taxiways are great for staying warm on fall evenings), nesting areas, and migratory stopovers. Military airfields add one more attractive feature birds like—well-groomed grass areas allowing birds to see each other while on the ground, feeding, or resting. Over the last five years, 59.4 percent of reported MAC birdstrikes occurred in the airport traffic area phase of operations (takeoff, 14.4 percent; traffic pattern, 11.1 percent; final approach, 15.3 percent; and landing, 13.8 percent). During this same five-year period, low-level operations accounted for 25.3 percent of birdstrikes. Once an aircraft is above 1,500 feet AGL, birdstrike occurrences decrease rapidly—but there is always a chance; a C-12F had a birdstrike at 17,500 feet a couple of years ago that left a 13-inch dent on the leading edge and wing tip.

Which MAC base is most attractive to the birds? While all have the required items birds are looking for, most MAC crewmembers would say Dover AFB DE has the most birdstrikes. True, the dollar cost of birdstrikes at Dover has been high, but folks at Little Rock AFB AR reported the highest total of birdstrikes from 1986 to 1990.

During calendar year 1990, command-wide there were 411 "non-damaging" birdstrikes reported—damage of less than $10,000 dollars, and 13 birdstrikes reported as Class "C" mishaps, with total costs of over $1 million dollars. Only the helicopter

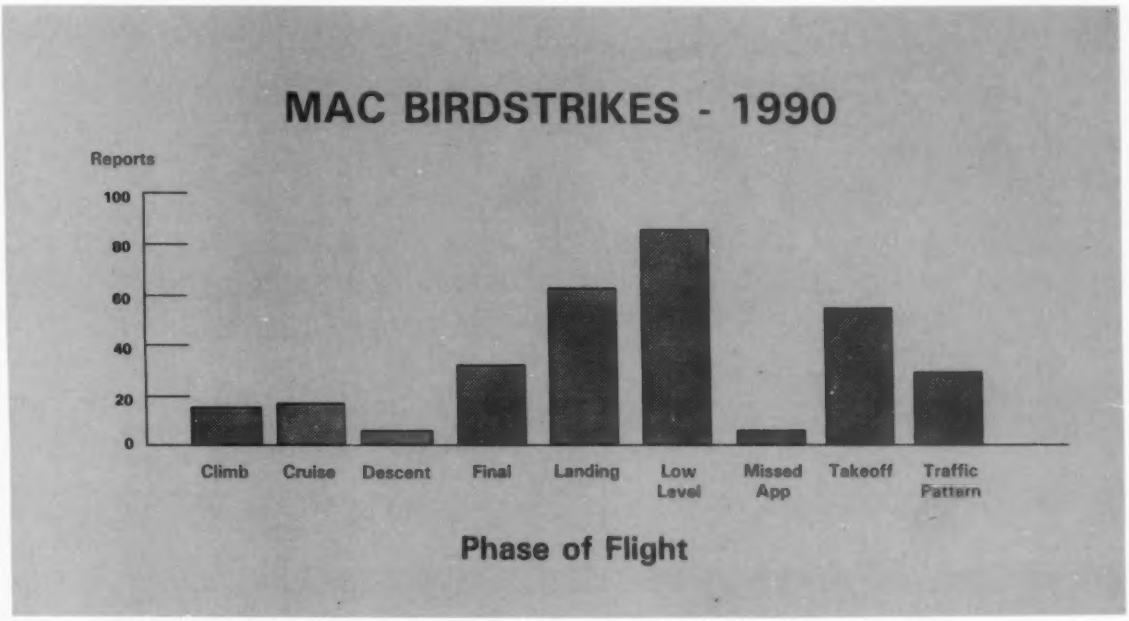


Figure 1

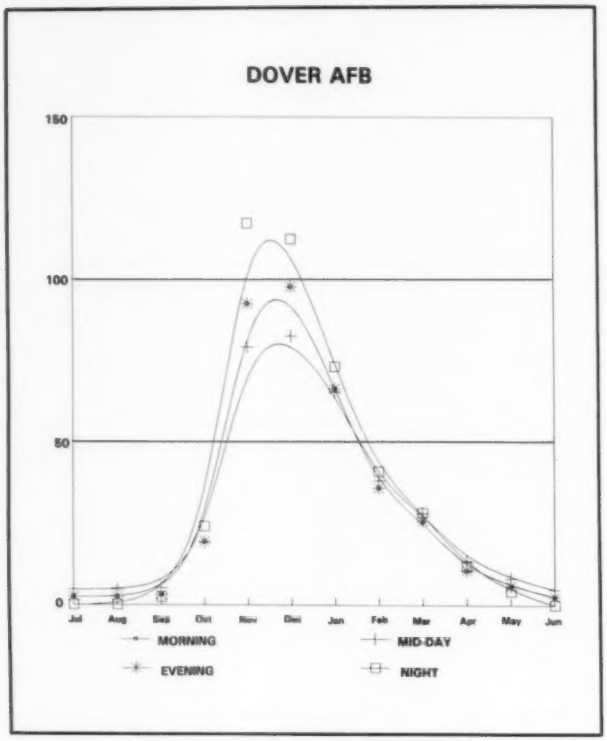


Figure 2

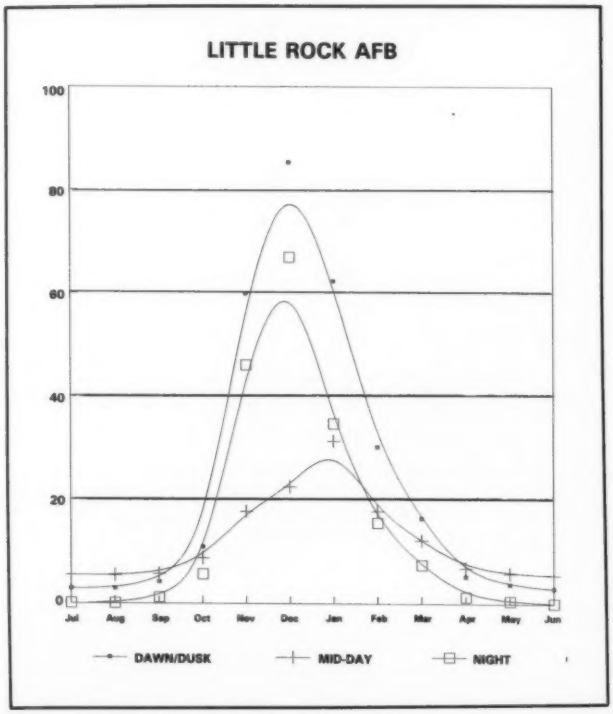
fleet escaped having a damaging birdstrike, although they did report several "non-damaging" ones.

While the total number of birdstrikes at Dover may appear low, the potential for a damaging birdstrike is still very high since migratory birds in that area are large water fowl. One action keeping the number of bird-aircraft encounters low at Dover is active use of birdwatch radar for monitoring flock movements and providing aircrews with directions to avoid the heaviest bird concentrations.

Bases without radar devoted to bird monitoring use Birdwatch conditions (or BIRDTAM system in Germany, Belgium, Luxembourg, and the Netherlands) to inform aircrews of bird movements and hazards. Birdwatch conditions alert aircrews of operational changes required because of bird activities in local areas. Birdwatch conditions are now categorized as Severe, Moderate, and Low (formerly, conditions were color-coded which led to confusion with color codes used during exercises, contingencies, and emergencies). A condition should be accompanied with the location of the hazard (AFR 127-15).

Birdwatch condition SEVERE. High bird population on or immediately above the active runway, or other specific location representing a high potential for a strike. Supervisors and aircrews must thoroughly evaluate mission need before conducting

Figure 3



operations in areas under that condition.

Birdwatch condition MODERATE. Increased bird population in locations which represents an increased potential for a strike. This condition requires increased vigilance by all agencies and supervisors and caution by aircrews.

Birdwatch condition LOW. Normal bird activity on and above the airfield with a low hazard probability.

Is there a time of year when aircrews can expect to encounter more birds? The answer is most likely yes, depending on where you operate your aircraft. For Dover and Little Rock, the accompanying Bird Avoidance Model (BAM) graphs indicate peaks of bird activity in November and December. For Altus AFB OK, bird activity is spread from October thru March. The vertical scale of the BAM graph is the number of expected birdstrikes per million nautical miles for 100 square feet of aircraft frontal surface—basically the higher the number, the larger your aircraft, the greater your chance of having an avian encounter. The Bird Aircraft Strike Hazard (BASH) team generates BAM graphs for low-level routes and bases—your wing flight safety folks can obtain them for you.

In the United Kingdom, June, July, and August are months which yield the largest number of birdstrikes, although the proportion of strikes causing damage isn't very high. One reason is that during summer months in England there is an abundance of little birds—juveniles on their early solo sorties straight from the nest, and small insect feeders, such as the swift. These small birds don't cause much damage when struck, unlike their large migratory relatives,such as cranes or swans. Speaking of swans, they migrate from the arctic areas of Europe to coastal areas of the British Islands where they remain from October to April.

In Europe, bird migrations move toward the southwest in autumn. In the spring, returning birds arrive earlier in western Europe than in center or eastern areas. During migration, birds concentrate at areas that provide short overwater routes. These include: Strait of Gilbraltar (Rota NS, Moron AB, and Malaga, Spain), the Bosporus (Ataturk IAP, Turkey), Island of Capri (Capodichino and Grazzaise, Italy), and Sicily (Sigonella, Trapani, and Palermo). In Europe, as in North America, mountains and coastlines tend to force birds to follow certain routes year after year; these are depicted in Chapter 9 "Bird Hazard Data" of FLIP Area Planning, Europe-Africa-Middle East (AP/2). When land birds have to cross mountains, they concentrate in valleys—the same ones you are likely to use for terrain masking on your low-level flight.

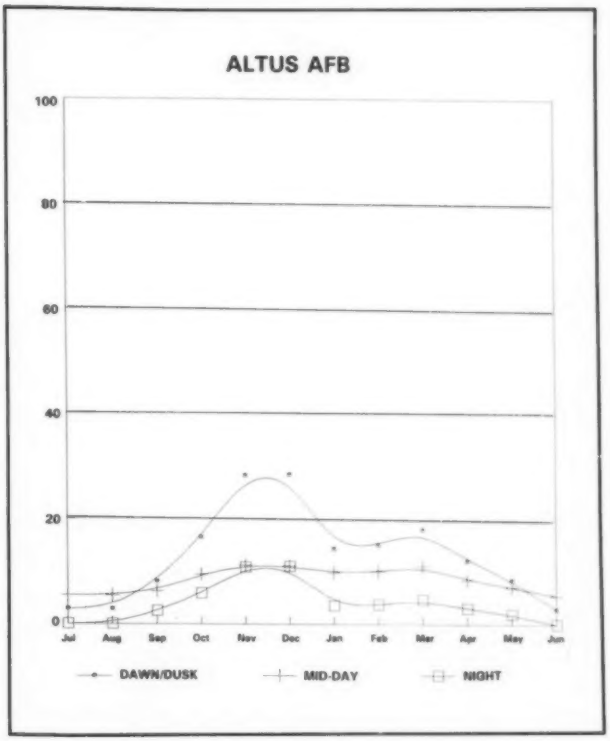


Figure 4

In North America, birds migrate from north to south in autumn. The fall migration has a leisurely pace but very concentrated groups of birds. Spring migrations tend to be very quick, with birds scattered in small groups. The large concentrations of birds during fall migration makes the movement noticeable and more hazardous to MAC aircraft. Spring migration is rarely noticed; even by veteran bird watchers. Adding to the difficulty of monitoring migrations is the fact that many bird species migrate during darkness.

What about bird migration in the southern hemisphere? There is very little bird migration in the southern hemisphere, since the limited land areas are predominantly tropical. About the only sizable and noticeable migration is of penguins between Antarctica and Tierra Del Fuego. The only way to hit a penguin is while you're ditching an aircraft—in which case you've got other things to worry about. Most of the bird hazards in the southern hemisphere are due to indigenous birds.

So, if you've done your best to avoid birds but the inevitable occurs, get out a birdstrike report and let the safety folks know what happened. Your report will build the knowledge base that the BASH team uses to help you avoid future avian encounters.

Sometimes It Can't Be Helped!

By MSgt. Gary L. Benton
HQ MAC Ground Safety

I was a little less than one fourth of the way through my 12-hour night shift during a mobility exercise—I was hungry and tired. Everything that can go wrong during an exercise usually will but, so far it had been quiet. I finished my fourth "sweep" of the flight line and decided to go by the marshaling yard—always something going on there.

As I approached the cargo area, my headlights caught a fully-loaded forklift moving toward a flatbed truck. I decided to watch the loading operation. The first thing to catch my eye was the lack of a spotter. The forklift operator lifted the load and positioned it above the truck bed. The forklift operator then dismounted, crawled under the load, and started positioning the dunnage—all of this with the engine running and not another soul around. When I realized what was happening, I started running toward the truck and forklift in an attempt to get the individual's attention. He very calmly crawled out from under the load and jumped from the truck.

"What ya' need, Sarge'?" he asked.

"See anything wrong with how you're doing your job?" I asked, hoping it would be obvious.

"Well, I'm really slow . . . could use more help, but we're busy and short of folks, so guess I'll have to do it alone."

"Well," I suggested, "lower your load, turn off the forklift, and let's talk."

To make a long story short, he was working with three airmen when the exercise started, but one had processed and deployed, one had switched to days, and the other was late for work. So, dedicated and motivated, he went at it alone. NOT VERY SMART.

After discussing his poor chances of surviving the night unhurt or alive, I called his supervisor. I knew her, so I was sure she would not condone unsafe acts. I quickly explained the situation and, sure enough, she stopped the job until she could send help. She had not been aware of the situation.

I returned to my vehicle and continued my cruise down the flight line. I spotted and corrected the normal nighttime mission support safety problems such as workers without flashlights or reflective vests, and vehicles back-

ing toward aircraft without prepositioned chalks. It was getting to be a busy night and it was still early in my shift. My watch indicated it was time to return to the office and monitor the phones while my coworker and friend, Tony, did a little cruising. At least while I was at the office I could listen to the radio, grab a bite to eat, and get a cold drink . . . anything to get me through the fourth day of this exercise.

Tony was going over his checklists as I entered the work area and gave me a quick nod as I fell into the chair at my desk. I quickly opened my lunchbox and started eating like a half-starved man.

"How's it look out there tonight?" Tony asked, knowing the answer already.

"Usual problems, but nothing big so far," I said, chewing a carrot stick.

"Truck have gas? The exercise is scheduled to go 'into condition black' in a little bit and you know how hard it will be to get gas."

"Ya, almost full, but . . . ."

Suddenly, the crash phone rang. It was notification of an on-base ground mishap with aircraft involvement—unknown damage and one severely injured worker being transported to the local hospital. I wrote down the mishap location, quickly grabbed my notebook, camera, and vehicle keys and initiated my mishap-response-checklist.

As I drove to the scene, I wondered what I would find; everything was so quiet just a few minutes ago. My rotating emergency lights threw eerie shadows on the buildup as I cut through the little-used side roads. I figured this would be another "textbook" accident where someone fell from a wing or cargo had struck part of the aircraft interior during an upload. Was I ever wrong!

At the scene I found out a cargo truck backed into the loading ramp of a C-130, pinning the spotter. The security police said the spotter had suffered unknown internal injuries while the aircraft was slightly damaged. The policeman then pointed out the truck's operator—a skinny, very frightened young airman.

I took a few photos and approached the operator of the truck to ask him a few questions about the mechanical condition of his vehicle and his qualifications when I heard him say, "My God, what if I killed her! Maybe I killed her."

"She was okay when she left . . . didn't you hear her say so?" The line chief was attempting to get the airman's emotions under control. "There wasn't any bleeding, remember? "

I gave them a minute or so and then approached.

"Excuse me. Could I ask the vehicle operator a few questions?"

"I didn't mean to hit her though, I really didn't," continued the young man.

"I know, but I would like you to tell me just what happened, in your own words, please."

The badly-shaken young man told me how he and his coworker were behind schedule and had decided to speed up the loading process by using the spotter but not prepositioning the chocks. While backing toward the aircraft, his foot slipped off the brake the spotter was pinned between the truck and ramp. She didn't have time to move before impact.

Since the damage to the aircraft was minor, I concentrated my investigation on the operator and coworker. Besides being tired (we all were), the man was qualified to operate the truck; it all boiled down to the two of them taking shortcuts. Shortcuts that landed one of them in the hospital. I finished my investigation and returned to the office so Tony could start his "tour."

"How'd it go? Class C or B?" he asked as I entered.

"Not as bad as it could have been. Looks like a Class C unless the spotter has severe internal injuries," I responded. We both knew it would be at least 24 hours before we'd know.

As Tony left the office, I stared into space and thought of the shift so far. Both events indicated serious problems: *Failure to communicate and failure to adhere to basic safety common sense.* The night shift supervisor was not aware of the manning problem, and the young airman was determined to prove he could do the job. Most likely he also did not want his friend to get into trouble. The airman should have been under direct supervision due to his relative inexperience in the Air Force, especially during high stress and low-manning periods. The two folks in this mishap meant to do a good job. Their real problem was speeding up instead of slowing down. Prepositioning chocks will cause a mishap—it's only a matter of time. Cutting corners and ignoring safety standards will get you eventually. Proper training, motivation, and dedication will make most of us an asset to our units.

I guess it's time to make another fresh pot of coffee. I still have five hours left on this shift and two more days of exercise. It's starting to get interesting.

A Breakdown in Communication

On 2 June 1990, at 0937 Alaskan Daylight Time, MarkAir Inc., Flight 3087, a Boeing 737-2X6C, crashed about 7.5 miles short of runway 14 at Unalakleet AK while executing a localizer approach. The Captain, First Officer, and a flight attendant sustained minor injuries. Another flight attendant received serious injuries. There were no passengers on board and the airplane was destroyed.

FLIGHT HISTORY

The flight originated at Anchorage International Airport. Instrument meteorological conditions existed at the time and the flight was on an IFR flight plan. Both pilots reported for duty approximately 45 minutes prior to their proposed departure time of 0750. Due to low ceiling and visibility at Unalakleet, departure was delayed. Flight 3087 was the first flight the Captain and First Officer had flown together, although they had met briefly on two previ-

ous occasions.

According to the pilots, ground preparation, taxi, takeoff, and climb were uneventful. All equipment on the airplane was operating normally, including the navigational systems. Flight planned time en route to Unalakleet was one hour and nine minutes.

About 45 minutes after takeoff, Anchorage Air Route Traffic Control Center cleared the flight to descend from FL 310 to 8,000 feet MSL. Anchorage Center reported Unalakleet ceiling and visibility were 500 feet overcast and 1 and one-half miles. These conditions were above minimums for the localizer approach to runway 14, the approach the Captain intended to fly.

The cockpit voice recorder tape showed the Captain briefed the First Officer during descent on the approach as follows: "Plan the localizer 14 . . . . I'll just do a quick procedure turn headed back in, so I'm not going to straighten out on the thing, the localizer, just teardrop and come right back around and land. Three thousand till we're inbound. DRIGE at 15 . . . ."

About 0920 the First Officer called the descent checklist complete. Two minutes later, Anchorage Center cleared the flight for the approach and told them to contact Center when the airplane descended below 10,000 feet and Nome Radio when the aircraft descended below 5,000 feet MSL. The First Officer called Anchorage Center at about 0925, reporting out of 10,000 feet.

The airplane crossed the Unalakleet VOR at 0931 at about 4,500 feet and proceeded outbound on the 291-degree radial. One and one-half minutes later, the First Officer stated his localizer needle was centering, indicating the aircraft was about to cross the initial approach fix for the first time. The Captain maintained his established heading while descending.

As the Captain called for 10 degrees of flaps, he entered a turn to the right as part of his intended teardrop maneuver. About half way through the turn, the aircraft descended through 3,000 feet. At 0936 the First Officer stated, "localizer's alive," indicating they were approaching the final approach course. The aircraft intercepted the final approach course and, about 15 seconds later, the First Officer called the landing checklist complete.

At 0936:41, the Captain stated, "There comes the 10 to 1,500—500 feet is what we're headed for. . . ." The pilots then discussed turning the bleed switches off to aid in avoiding gravel FOD and turning the engine anti-icing system off. This conversation began as the airplane descended through about 1,700 feet.

The aircraft descended through 1,500 feet MSL at about 9.5 DME. Shortly thereafter, the First Officer announced they were at 1,000 feet, the altimeters and flight instruments had been cross-checked, and instrument warning flags were not visible. These items were all MarkAir-required calls. The Captain then directed the First Officer to activate the runway lights using the VHF radio. At 1037:49, the First Officer announced, in a normal tone of voice, he had visual contact with the ground. At that time, the altitude of Flight 3087 was around 630 feet MSL. Impact with the ground occurred two and one-half seconds later. The airplane was destroyed with a "hull-loss value," according to the insurance investigator handling the claim, of $20,000,000. Environmental cleanup and reclamation costs were $130,000.

ANALYSIS

Certification, maintenance, and airworthiness of the airplane were not factors in this mishap. All systems pertinent to the mishap sequence appeared to be operating normally. In general, the pilots were certified and examined according to current government and company regulations and had received adequate training to accomplish this flight. The Captain and First Officer were well rested for the morning flight to Unalakleet.

The general complexity of the instrument approach was not a factor in the mishap. Nonprecision approaches can be characterized as somewhat more challenging than precision approaches. However, the localizer approach to runway 14, in this instance, should not have been difficult to fly since it required no rapid descents, no large runway offsets, and the weather was above approach minimums.

Mishap analysis focused on the following areas: 1) the Captain's approach briefing; 2) the Captain's deviation from standard FAR procedure turn procedures by descending below 3,000 feet prior to intercepting the final approach course inbound; 3) deviation by the Captain from standard FAR instrument procedures by descending below 1,500 feet prior to 5 DME; and 4) the fact the First Officer did not notice, question, and/or correct any of the above items.

Approximately 15 minutes before reaching the initial approach fix (DRIGE outbound), the Captain briefed the First Officer on the procedure he planned to use for the localizer approach. Although the Captain's briefing was detailed in most respects, he omitted certain facts. First, the Captain stated his intention to deviate from the procedure turn, as depicted on the approach chart, and fly a teardrop course reversal instead of turning outbound on the localizer upon reaching the initial approach fix. The Captain did not, however, describe his intended procedure for timing the outbound leg and initiating

the turn inbound, and the First Officer did not question the Captain about his intent.

The second omission in the briefing was the Captain's failure to define the geographic location of the final approach fix (DRIGE inbound) as five DME. This omission was significant in subsequent events. Although the Captain stated the proper altitude limitation at DRIGE as 1,500 feet, he later associated that altitude limitation with 10 DME. It was this premature descent below 1,500 feet that led to the mishap. The Safety Board believed that had the Captain misidentified DRIGE during the briefing as 10 DME the First Officer could have recognized the error. Further, had the Captain correctly identified DRIGE as 5 DME, and stated this aloud, he might not have developed a mindset that led to a descent at 10 DME.

The Captain's decision to fly a teardrop course reversal was in accordance with FAA/Jeppesen guidelines. However, according to MarkAir management personnel, it was not in accordance with MarkAir procedures. Since the Captain and other MarkAir pilots dispute the position of management on this issue, the Safety Board was unable to determine exactly what type of entry method MarkAir expected its pilots to use.

Interviews with MarkAir management pilots revealed that one of the reasons for emphasizing the more time-consuming approach entry method was to give aircrews more time to perform an orderly and stabilized descent into a destination airfield.

Regardless of the Captain's omission of outbound leg timing in his approach briefing, the track of the airplane resulted in a proper intercept of the inbound localizer course about nine NM from the runway and five NM from DRIGE. Thus, the decision to use this entry procedure should not have affected the success of the approach. However, instead of maintaining 3,000 feet until intercepting the localizer course, flight data recorder altitude and heading data clearly indicate the Captain began the descent while more than 90-degrees of turn remained to the localizer inbound course.

The Captain's decision to descend below 3,000 feet before completing the procedure turn probably contributed to the erroneous mindset that he should initiate the descent from 1,500 feet at 10 DME. During the turn inbound, as the airplane descended, the Captain stated aloud, "15 till 10 DME," indicating the mistaken situational awareness that persisted until the airplane struck the ground.

During post-accident interviews, the Captain could not explain why he developed the mindset that the descent to 500 feet should be initiated at 10 rather than 5 DME. It is readily apparent, however, he did not refer to the approach plate in detail after his initial approach briefing.

The First Officer, although experienced in reciprocating and turboprop airplanes, was relatively inexperienced in his duties in the B-737, having accrued only 80 hours in the turbojet airplane. The Captain, aware of the First Officer's inexperience, provided guidance regarding the airplane and operation throughout the flight.

On three occasions, the Captain audibly indicated or implied his plan to descend from 1,500 feet when reaching the 10 DME fix. Whether these comments were intended to solicit confirmation from the First Officer that this descent was in accord with the approach plate isn't clear. It is clear the First Officer did not question the Captain's action. The Captain had, in fact, encouraged the First Officer to speak up if he saw anything he didn't like. The Safety Board believed it more likely the First Officer was not monitoring the approach closely because he was preoccupied with his other duties. His comment, "I'm new in the airplane and busy all the time," supports a conclusion that the number of new procedures and actions required, distracted him from closely monitoring the instrument approach.

The Board concluded that the First Officer either failed to monitor the approach sufficiently to detect the Captain's errors or was hesitant to question the way in which the approach was flown. In either case, it appears the First Officer may not have been sufficiently aware of the importance of one of his primary roles as the non-flying pilot—to monitor the flying pilot's approach and question any inconsistencies.

PROBABLE CAUSE

The National Transportation Safety Board determined the probable causes of this mishap were deficiencies in flight crew coordination, their failure to adequately prepare for and properly execute the localizer nonprecision approach, and their subsequent premature descent.

APPLICATION TO MAC

The applications to MAC resulting from this mishap are obvious. To the maximum extent possible, we stress aircrew coordination, training, and keeping lines of communication open. This mishap is a vivid example of where communication broke down. The bottom line, of course, is to question the other crewmember if he's doing something out of the ordinary or nonstandard. On the other hand, if you plan to deviate from established procedures or guidelines, have a reason for your plan of attack and let everyone know what you are doing, and what to expect. It can save a lot of explaining later.

It Can't Happen to Me!

By Maj. Patrick D. Nowak, AFLC

It was a fairly normal day with activities no more or less hectic than any other. The weather was 500 feet scattered, measured 2,600 feet broken, 5,000 feet overcast, and seven miles visibility. A routine after-lunch meeting with the civil engineers to discuss taxiway repairs looked to be just another task in an overloaded day. Some of the participants recommended that after the meeting, a tour of the work area seemed in order, so a team of eight loaded into two vans (one of them the Base Operations van with a radio) and proceeded across the airfield to inspect the taxiway. The driver of the second vehicle pulled behind the Base Ops van and followed it to the runway. The driver of the Base Ops vehicle van requested clearance to cross the approach end of the runway and proceed to taxiway 7. The ground controller, seeing two vehicles in formation approach the runway, cleared the vehicles to cross. The controller's transmission made no reference to a second vehicle. The pattern was clear of traffic and there was little activity on the airdrome.

After 30 minutes of discussing the finer points of curing concrete and the best method of sealing cracks for longer wear, the individuals traveling in the Base Ops van regrouped and started back toward the runway for the return trip. The second group, still debating those finer points, noticed they were about to be left behind. Assuming they were going to use the same procedures on the way back, they hurried to their van in the hope of rejoining the first vehicle. The driver of the second van, realizing he required an escort to cross the runway (at least he was pretty sure he did), put the pedal to the metal. Since he could not communicate with the tower or the lead van, and the first crossing was as a formation of two, the driver watched what the first van did and proceeded accordingly. Feeling lucky, he entered the runway when the first van was about three quarters of the way across.

At approximately six-tenths of a mile from the field an aircraft broke out of the clouds. The pilot, flying an ILS approach, noticed one vehicle exiting the runway. As he transitioned back to runway centerline, he noticed a second vehicle still on the runway. At that point the crew initiated a missed approach.

Where was Murphy hiding this time?

—At the meeting. As the group left and proceeded to the site requiring repair work, neither the van drivers nor the group leader discussed procedures for crossing the runway.

—When the vehicle with the radio crossed the runway the first time, the driver did not identify the convoy as consisting of two vehicles requiring permission to cross.

—The ground controller, in the initial clearance to cross the runway, did not mention the number of vehicles cleared to cross.

—When the group finished the survey and started back across the runway, neither of the drivers nor the group leader clarified procedures to be used.

—Again, the second request to cross the runway sounded the same as the first; however, only one vehicle was at the intersection. Even though an aircraft was on approach, the controller cleared the vehicle across, albeit "without delay."

—The second vehicle, seeing the first one cross, proceeded—following the same lack of procedures used the first time.

—The controller, now confused by the appearance of the second vehicle, tried to determine where this vehicle had come from. In so doing, the radio traffic became congested. As a result, nobody got the word.

—Not realizing a problem existed, both vans rode off into the sunset, still feeling lucky.

Procedures not followed? You bet. Assumptions made by individuals in the van and the tower? You bet. Lack of effective communication? You bet. Does the incident resemble routine every-day activities (with the exception of the missed approach?) I hope *you* don't *bet*! ✈

Flying-Hour Milestones

7,500

315 MAS
Lt. Col. James P. Furlong
Lt. Col. William R. Losey

5,000

53 MAS
TSgt. James V. Franz

63 TAS
Maj. Michael J. Bundshuh
Maj. Kenneth C. Seitz
MSgt. Patrick M. Baucom
TSgt. Gary G. Gosselin
TSgt. Lance J. Pruett

95 TAS
Lt. Col. Thomas J. Nowicki
SMSgt. Gerald L. Green
TSgt. Jeffrey J. Bastar
TSgt. Paul A. Lagerman

96 TAS
Maj. Larry W. Snider

164 TAG
Lt. Col. Donald G. Howard
Lt. Col. Donald H. Schendel

179 TAG
Lt. Col. Richard M. Green
Lt. Col. Robert C. McKnight

193 SOG
MSgt. Paul B. Sheffer

315 MAS
Maj. John P. Hall, Jr.
Maj. James B. Roberts, Jr.
Maj. Michael D. Swain
Maj. Edward S. Stokes, III.
Maj. James R. Shaughnessy

ARS
Capt. William J. Dunn, Jr.
Capt. Thomas D. Summers, II.

9 MAS
Capt. John S. Miller
Capt. Christopher J. Maple

40 TAS
Lt. Col. Jeffrey A. Northgraves
Maj. James W. Winters
Capt. George E. Akins
Capt. Andrew L. Arace
Capt. Salvatore Catanzaro
Capt. Gregory L. Coy
Capt. Michael F. Donnelly
Capt. Kenneth C. Coons
Capt. Gary F. Giordono
Capt. Joseph M. Hastings
Capt. Jeffrey A. Hoffer
Capt. Barnett H. Miller
Capt. Dean T. Richards
Capt. Thomas E. Rowe
Capt. William V. Steers, IV
Capt. Gerald E. Szpila
MSgt. Anthony Kres
MSgt. John A. Rigg
TSgt. William R. Schaefer
SSgt. J. B. Carteret, III.
SSgt. John C. Groth
SSgt. Anthony L. Johnson
SSgt. William E. Lewin
SSgt. Reginald T. Mickel

45 AES
Maj. Pauline A. LesCamela

53 MAS
Capt. David K. Anderson
Capt. John L. Charamella
Capt. James S. Chestnut
Capt. Earl Q. Davis
Capt. Timothy H. Diemer
Capt. Patrick H. Donovan
Capt. Adrian J. Hayes
Capt. Theodore Hutchinson
Capt. David E. Maynard
Capt. Brian A. McGaffic
Capt. Robert T. McSpadden
Capt. Robert A. Nuanes
Capt. Kevin D. Palmer
Capt. Gregory S. Powell
Capt. Dan Rose
MSgt. John W. Arseneault
MSgt. Wilfred Jones
MSgt. Antonio V. Gascon
TSgt. James V. Franz
TSgt. John J. Watts
SSgt. Reginald P. Shafer
SSgt. David P. Racy
Sgt. Glenn A. Chandler

56 MAS
MSgt. Paul M. Shippey

63 TAS
Maj. Thomas C. Bills
Capt. Christopher L. Austin
Capt. Thomas C. Berrodin
MSgt. Rhett I. Bartz
TSgt. Roger V. Urban

164 TAS
Lt. Col. Robert R. Osterhout
Maj. Eric Wigand
Maj. Michael Winslow, Jr.
Capt. Jeffrey B. Charette
Capt. Michael D. Galat
Capt. Mark P. Lynskey

179 TAG
Capt. Mark L. Stephens
Capt. Jeffrey B. Crank

193 SOG
Capt. Robert J. Georges
Capt. John L. Walsh
MSgt. Gary H. Gattens

315 MAS
Maj. James L. Faulkenberry
Maj. William Murrell
Maj. Melvin R. Robinson
Maj. Bruce C. Vanderhoof
Capt. Edward D. Dertien
Capt. Eric S. Nelson
Capt. Dan C. Yarbrough
MSgt. Richard G. Binkley
MSgt. Danny B. Morrison
MSgt. Nolan M. Prestwood
Mgt. Anthony R. Reyes
MSgt. Robert J. Sumner
TSgt. Christopher A. Beckley
TSgt. Douglas A. Boehme
TSgt. Michael S. McCook
SSgt. Kevin L. Dudley
SSgt. John A. Rasmussen

433 MAW
Capt. Warnie F. Meisetshleager, Jr.

512 MAW
MSgt. Willie C. Fair
MSgt. Oscar L. Griffin
MSgt. James H. McNair
MSgt. Walter J. Taggart
TSgt. Mark A. Allen
TSgt. Gary E. Junge
TSgt. Mark F. Mascis
TSgt. David H. Petty
TSgt. Richard W. Shipley
TSgt. John M. Shortall

1,000

ARS
Capt. Faron R. Thompson
Capt. Leslie C. Clinger
Capt. Gregory J. Lengyel
1st. Lt. Charles M. Moncrief
1st. Lt. Rhonda A. Kelly
1st. Lt. Keith W. Harris

Ranks and units are those at time of award.

Explosives Safety in Contingency Airlift

By Mr. Larry K. Wolfe
HQ MAC Explosives Safety

Your unit is tasked to quickly airlift large amounts of explosives and other hazardous cargo. You don't have enough "hot spots" to handle the number of aircraft needed. Sound familiar?

We learned a lot from Grenada and Panama operations and even more from our recent adventure. We continually improved our process. (Didn't know you were practicing Quality Management principles back in the early 80s, did you?) Continuous improvement has been the backbone of the explosive safety program for years. When the above situation occurs, it's almost too late to react. Planning and developing a good contingency aircraft parking plan using reduced explosive quantity-distance (QD) criteria should solve most problems and create more "hot spots." Of course, when using reduced QD criteria, you accept a greater degree of risk. You must do a comprehensive risk assessment and brief your commander on the additional risks. If he considers the additional risks acceptable—you're good to go.

We have seen contingency airlift evolve from a total disregard for explosive safety standards to our most recent operations where the mission was accomplished as safely as possible. This transformation has taken place in less than ten years and that's what we must constantly work toward. You should give your wing commander options and sound technical advice on how to accomplish the mission as safely as possible, and continue to review plans for ways to improve.

Don't take the easy way out by saying, "We can't do that; it violates explosive safety standards." Be part of the solution, rather than the problem.

If you have a nearby Army/Navy/Marine unit to support, work with them; preplan their airlift; figure out the best way to palletize and load their munitions/explosives and other hazardous cargo. The wing commander is not your only customer. Provide the best service you can to our airlift users. If contingency airlift rules aren't enough and a valid need exists to airlift incompatible explosives on the same aircraft, perhaps a compatibility waiver is the answer. An actual test (detonation) may prove specific load configurations will not propagate, and, in such cases, a waiver is not necessary. Survivability and customer service are our goal. If a waiver is necessary, HQ MAC Explosives Safety is Air Force waiver-approval authority for explosives not meeting compatibility rules. The folks there will evaluate your request, offer ways to mitigate the risk, and approve a load plan if necessary.

Compatibility waivers are normally approved when operational necessity requires airlift of explosives and other hazardous items on the same aircraft. Waivers may be granted for one-time airlift or for longer periods if a recurring requirement exists. The cardinal rule is: "We won't jeapordize our aircrews or aircraft for convenience or ease of operation." Required waiver information to make proper evaluation and risk assessment is contained in AFR 71-4, paragraph 2-3b.

Currently, several agencies have wartime waivers allowing airlift of incompatible explosives/hazardous cargo to meet contingency requirements. These include security police, explosive ordnance disposal, and components of other services.

Also, standard air munitions packages (STAMP) and tactical ammunition rapid response packages (TARRP) are approved for airlift.

The main player in this whole process are the wing/base explosives safety officers. They are valuable members of your team and should be included in your process.

Hats off to all MAC explosives safety officers who were instrumental in safe airlift explosives/hazardous cargo during Operations Desert Shield and Desert Storm.

Old meets New --
the H-3 and the Space Shuttle.

41st Air Rescue Squadron H-3s standing alert during Space Shuttle launch.

Helicopters from the 1960s and NASA's finest.

By Maj. Dale Van De Ven
Associate Editor

What flying machine in the U.S. Air Force inventory is capable of a speed range extending from 30 knots rearward to 142 knots forward, and can perform sideward flight up to 35 knots? Need a hint? This machine is older than your average E-1. Still don't have it? Okay, one last hint. On 1 June 1967, two of these aircraft made the first non-stop transatlantic flight by helicopter. Each aircraft made nine aerial refuelings, and the 4,270 mile trip from New York to Paris (for the Paris Air Show) took 30-hours and 46-minutes.

If your answer is the Sikorsky S-61R (U.S. military designation CH-3 and HH-3), you're right!

The first version of the S-61 ordered into production was the SH-3A Sea King, an amphibious anti-submarine helicopter. The original U.S. Navy contract was let on 23 Sep 1957 and the prototype flew for the first time on 11 March 1959. The first deliveries were made in Sep 1961.

On 6 March 1965, a SH-3A made the first nonstop helicopter flight across the North American continent and, in doing so, set a new international straight-line distance record of 2,116 miles. The helicopter took off from the aircraft carrier "Hornet," near San Diego, and landed on the carrier "Franklin D. Roosevelt" in Jacksonville, FL., 15 hours and 52 minutes later. Average ground speed was 133.3 mph.

Although based on the SH-3A, the S-61R introduced many important design changes while remaining an amphibious aircraft. The first S-61R flew on 17 June 1963. The initial delivery of an operational CH-3C, for drone recovery duties, was made on 30 Dec 1963 at Tyndall AFB. In later years a total of 50 CH-3Es were converted to HH-3Es for use in search and rescue, and combat aircrew recovery. The conversion included the addition of titanium armor plate for protection from small arms fire for the pilot, copilot, crewman, and vulnerable components. These aircraft are affectionately known as "Jolly Green Giants."

Most people associate the "Jolly Green" with its Southeast Asia service where it was credited with 567 combat saves. The aircraft continues to stand ready to retrieve airmen lost behind enemy lines, though not all H-3s are used in combat rescue scenarios.

The 41st Air Rescue Squadron, located at Patrick AFB, uses this rotary world equivalent of the C-130 in its support of the Eastern Space and Missile Center and the National Search and Rescue Plan. To find out just exactly what "support of the Eastern Space and Missile Center" meant, I spent some time with Capt. Bob Mohan, 41 ARS/IP, who was able to provide more specifics. "For NASA launches out of Kennedy and DOD launches out of Cape Canaveral, we provide prelaunch safety surveillance. NASA figures out the launch trajectory over the water and we clear the area of surface vessels. With the Space Shuttle program, we also have a contingency recovery mission. If

the shuttle should have an emergency and the crew would need to be recovered, we're there to provide support. We would primarily be there to perform medevac duties, but we can also do open ocean recovery."

Helicopter crews from the 41st standing by to provide recovery support include three pararescue men per helicopter. Currently 18 PJs are assigned to the 41st and MSgt. Dan Humphreys explained how they provide support well beyond the immediate launch area. "If the shuttle should have to abort its flight, they can head for either Africa or Spain where Trans Oceanic Abort Landing (TAL) sites are located. We send six PJs to help man the sites. They take a tremendous amount of gear along with them including a plane full of medical supplies. If they do abort the flight, the rescue teams at the TAL sites, which include flight surgeons, will be the only medical people around."

The 41st doesn't only work with NASA on launch days. Part of their support includes training of NASA civilian contractor fire fighting/rescue personnel. I rode along with Capt. Mohan and his crew on such a mission and watched the civilian contractors practicing water personnel insertion techniques (jumping out of the Jolly Green from about a 10-20-foot hover).

Sgt. Mitch LaFleur performing postflight maintenance.

Capt. Tom Greetan, 41 ARS/SE, outlined some of the additional missions the unit handles, "We also provide resources for civilian rescue. We'll receive a call from the local authorities or the Coast Guard saying they can't support a mission and asking if we can help. We do about one search a month. We also provide 'down range' support for the U.S. Navy by flying to their navigational sites in the Bahamas. We take them cargo and personnel on a monthly basis.

"We also fly DV support. Our passengers have included general officers, the Governor of Florida, and recently Vice President Quayle." Capt. Mohan added, "We also provide general base support which includes incentive rides, orientation rides, aerial photography platforms, aircraft crash support, and any other kind of support that vertical lift can provide."

The H-3 world is dwindling and, at the present time, the aircraft are located at four locations: the school house at Kirtland AFB, Patrick AFB, Kadena AB, Japan, and Keflavik, Iceland. All of the units are scheduled to replace their H-3s with more modern aircraft. The overseas locations with combat missions are receiving replacement aircraft first, so Patrick will be the last stronghold of the H-3. I stopped by the maintenance shop and asked CMSgt. Dennis Comacho what it took to keep a "mature" weapon system operating. "The H-3 is a workhorse, but it's certainly getting old. We have '67 and '69 models and parts availability is our biggest concern. As the system aged and they came up with replacement helicopters they stopped renewing contracts. That makes parts very scarce. When you need a part no longer in production, you have to remove the old one and send it back for repair. The H-3 is a very good design. In fact a company in Italy is still making them. If you have the overhaul parts it's very maintainable, and since it's a Navy standard aircraft, with an amphibious hull, it's a good aircraft for Patricks' high corrision environment.

"The man-hour-to-flying-hour ratios just keep getting driven up as a result of not having the necessary parts. We have five aircraft assigned and when we cover a shuttle flight, we have a requirement for three, with a spare, and our fifth aircraft becomes a parts bin.

"The H-3 is old; it doesn't have very high technology, but can always be relied on. That's why it's still here at Patrick. The mission here is high priority and takes a reliable aircraft to get out there and do the job."

If one fact was made clear during my visit, it was that the H-3 is certainly still doing its job. Still, I wondered what it would be like to be a pilot in an aircraft with a long combat history, yet not serving in a combat role. Virtually, all pilots at the 41st had prior overseas assignments so they are familiar with the combat rescue mission. I asked Captains Mohan and Greetan for their views. Captain Mohan was the first to respond, "I was stationed in Korea with the 38th Air Rescue Squadron, same wing, same rescue service, but with a combat rescue mission. It was a combat qualified unit with its theater of operations in place. The secondary missions are pretty much the same, but

Left to right, TSgt. Dan Inch, Capt. Larry Friend, Sgt. Steve Scar, and Capt. Robert Mohan returning from a NASA support flight.

Left to right, TSgt. Loretta Cox, (MAC additional duty Safety NCO of the Year), Sgt. Mitch LaFleur, and Amn. Chris Dryden inspect an H-3 engine.

they don't have a peace time operational mission per se.

"The means of accomplishing the mission are the same, only we don't carry guns, and we don't fly tactically. We both fly night vision goggles, and do land, water, and hoist recovery."

Captain Greetan added his comments, "When I was stationed at Kadena, people did not want to come to Patrick. They thought we didn't do anything here because we were a noncombat unit. When they get here they find out we do more operationally, in direct support of people, than they do in other units."

In addition to having a "real world" operational mission, the unit at Patrick has the flying hours available to season its flyers. The unit currently has 13 pilots and a yearly flying-hour limit of 1,600 hours; up from its past limit of 1,200. I asked Captain Mohan about the flying schedule and he responded, "Right now we're in a unique situation and I'm getting around 40 hours a month. Three hours is typical for a H-3 sortie and it took me six years to reach 1,000-hours. All the flying we're doing is paying off and we're getting a lot of upgrades. People are getting a lot of experience they eventually will carry over to H-60s or H-53s. It's all good quality heavy lift time. We've got a lot of operational missions, a lot of currency, and a lot of different missions to stay qualified in. We're working hard."

It had become very clear the H-3 would remain an important part of both Air Rescue Service and 41 ARS for at least the next few years. Lt. Col. John Rehkop, 41 ARS Commander, was able to provide some insight into the unit's future plans.

"This fall we're going to split up into three rescue squadrons. The 41st will still be here as an H-3 helicopter unit, but we'll be joined by the 71st ARS, flying HC-130s, and maintenance will become the 741st Consolitated Aircraft Maintenance Squadron. We're going from being a detachment of 30 people two years ago, to three squadrons with over 200 folks. MAC's presence on Patrick has grown considerably, and the base wants us here to use the airfield.

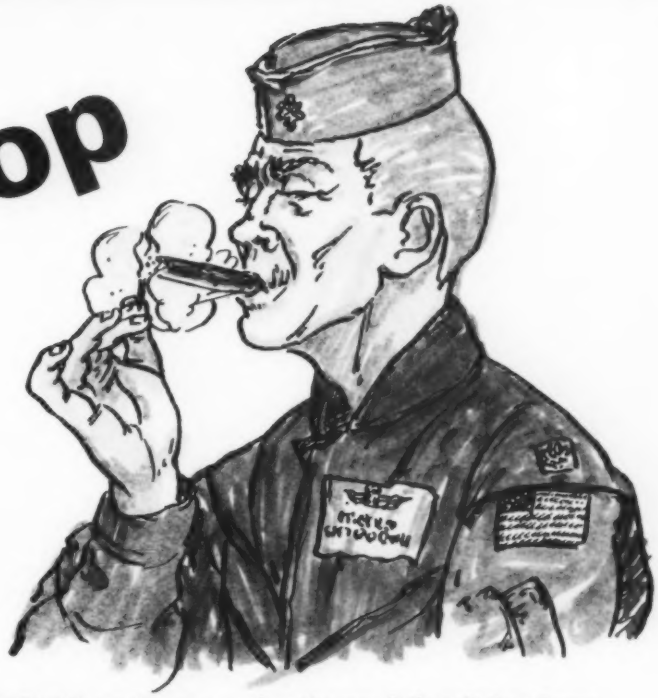
"We broadened the scope of our job here with our recent focus on air refueling, which we need for shuttle recoveries. We fly 200 miles off-shore and need air refueling capability. With the predominance of night shuttle launches, we had to add the NVG special mission qualification. Over the last year and a half, we've worked hard to get every crewmember qualified in both air refueling and NVG water operations. We're just about totally complete with the whole squadron.

"Kennedy Space Center has been designated as a primary Space Shuttle landing spot so we'll be doing support for landings as well. We anticipate the next launch to return to Kennedy and that increases our responsibilities. We'll be pulling alert from launch to landing with three aircraft. It's a hell of a lot of fun being a helicopter pilot."

From what I learned from my short visit at the 41st, I have to admit, I see what the colonel means. Both the H-3 and Air Rescue Service are alive and well at Patrick AFB, and with the addition this fall of the HC-130 squadron, I'd say things are only going to get better.

Pop

By Mr. Donald R. Dillman
Colleyville, Texas



We all sat around the linoleum-covered table in the chow hall at Goose Bay. Remnants of a meal remained on our plates. Snow fell steadily outside the window. We met at this unlikely crossroads, flying cargo back and forth across the North Atlantic. It was a small group, comfortable with each other. We had been doing the job long enough to be confident in our own and each other's skill. A blond Air Force captain was drawing patterns on the table with his finger; another played with a pair of spoons. The only second lieutenant in the group watched the rest of us without comment. Another man sat hunched over his plate, pushing greasy brown gravy toward his eggs with the last corner of a biscuit. The conversation gradually turned to different personalities, present and past. We all finished reminiscing about Pop and slowly nodded our heads in agreement. *He* would be missed. None of us could ever take *his* place. Although we practice a profession which demands thinking "I am the best," we all thought (in a dark corner of our mind where we kept all of our unshakeable beliefs) that he was the "best of the best." *He was Pop.* I couldn't believe he was gone! I drifted to my own thoughts about him.

Lt. Col. George "Pop" Pope walked up to me in the squadron. He was living proof that looking like an aviator has nothing to do with flying skill. His brown hair, streaked heavily with smoke-grey, had thinned to almost nothing. His brown eyes were set wide apart. They were clear and bright and reflected the lifetime of adventures they had witnessed. His forehead was toughened and etched by hours in the sun enjoying his two great passions: Flying and boating. The face had the texture of durable, reliable leather. The right corner of his mouth, discolored to a dark brown from years of smoking "Hav-a-Tampa" cigars.

His hands were scarred and rugged, with a three-inch mark across the top of the right one caused by a shrapnel wound during a mortar attack in DaNang. The flight suit fit loosely. On his left shoulder, instead of the issue cloth flag, he wore a silk-embroidered American flag.

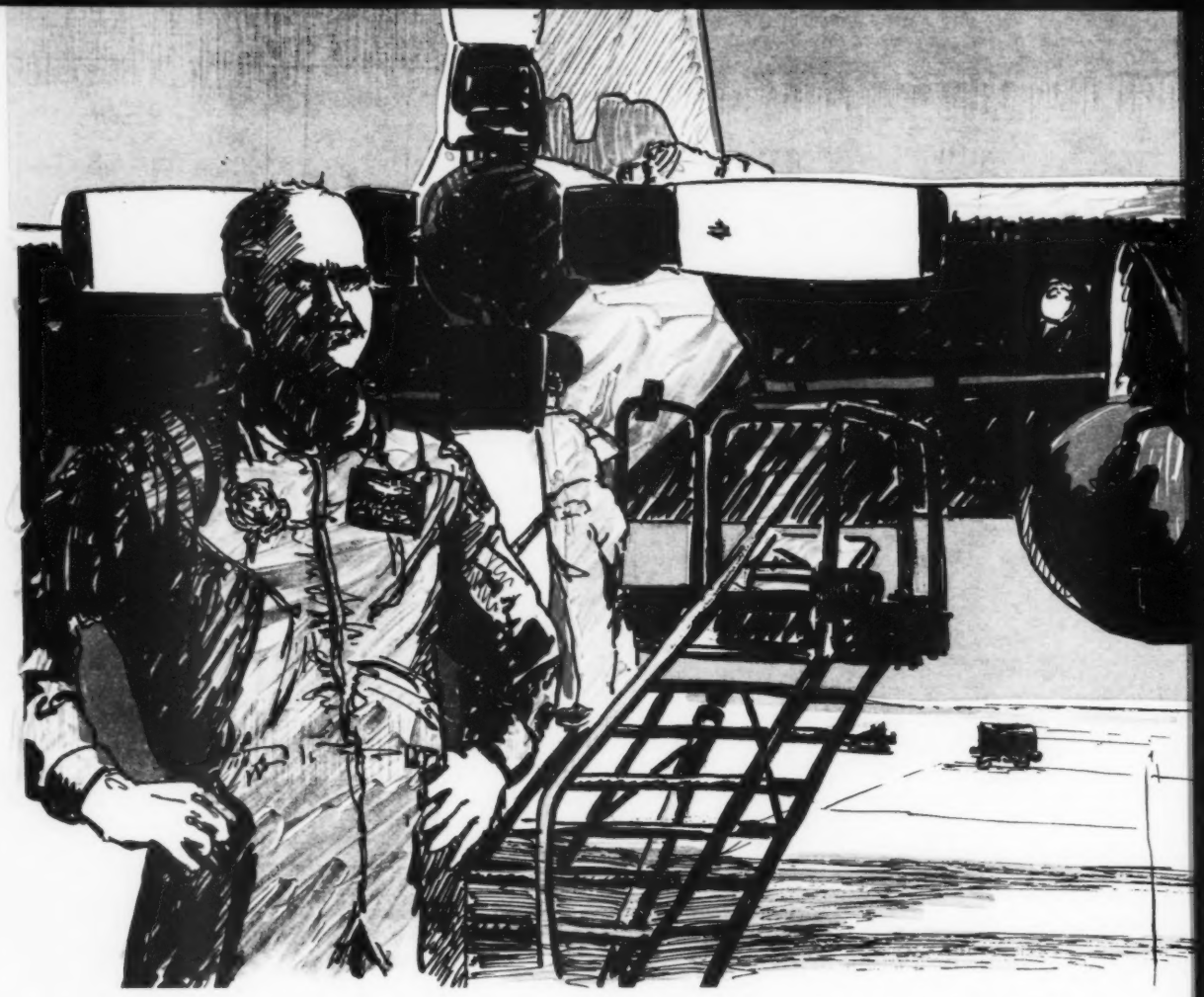
Pop's father was in WW II and Korea; his grandfather in WWI, and his great-great grandfather went south with Virginia's favorite son, Robert E. Lee. Popes served when called.

I had heard various things about him: great, sullen, best pilot in the unit, a friend of the younger pilots. My first trip with him started out slowly and I didn't think he was different. But that night, over a couple of beers, he began to open a new world for me. He talked gently but with a force that exposed his underlying passion. His hands described flights of days past. They circled and soared and brought to life his adventures. His clear brown eyes were wide open and animated with the love a father has for a son. He took me to places and times I knew nothing about . . . from flights across the stormy North Atlantic at 7,000 ft in a C-124 to the beauty of the South American plain from the vantage of a C-141. I finally began to realize I was at the knee of a master.

Pop let the force of his mes-

SPECIAL CATEGORY

1991 MAC FLIGHT SAFETY WRITING CONTEST



sage sink in: "You never stop learning in this game. There's never a perfect flight. You have to go back after every flight and figure out what you could have done better—a radio transmission had to be repeated, a turn got sloppy, you didn't anticipate an altitude change. A professional athlete never stops training . . . we don't either. We can always get better."

By the end of the evening, I seriously wondered what I was doing in the same cockpit with him. I was a technician rather than an aviator. I was proud of myself because I knew all the "numbers" about the airplane we shared. Pop knew that numbers, pressures, and definitions were the beginning of the equation, not the end. He simply expected you to know those things. That was a given before takeoff—all tires are full of air, all engines are running, all wings are attached and all required facts are present in an aviator's mind.

The next day I saw what I had previously missed. I witnessed flying like never before. His hands moved with the grace of a ballerina. During turns, he wouldn't even look inside, yet the altimeter seemed painted on the panel. He knew when to add power. He anticipated inputs before the airplane told him it was already too late. There were no fast movements; the airplane was merely an extension of his soul—they were bonded.

Flying came easily to Pop, yet he always looked beyond the physical act of flying. He worked hard, studied, and listened. Whenever he was nursing a broken plane on the ramp, he didn't look for the nearest coffee stand—he stayed at the airplane and stood in the background while engineers and mechanics worked. He respected them, these masters of engines, air conditioning, and hydraulics. Pop knew their pride when the plane worked well. He saw their disappointment when it didn't. Most people see planes as overgrown toasters—a collection of scrap metal without a soul. Pop knew better.

We flew together almost constantly after that first trip. In any

walk of life you need a guide . . . a teacher of the secrets. Pop became all of those for me and more. One night at home, after one-too-many beers, I called him.

"Pop, it's me." He knew who it was right away. "I just wanted to tell you you're my hero." There was a pause then he started laughing. "I'm no hero. I just love what I'm doing, and if I pass on a thing or two along the way, so much the better. We all do it, it goes with the job. You do the same whether you know it or not."

Most of us who had been around for more than a couple of years and could pass on experiences locked away in our heads always have somewhere else to be—a better staff job, an additional duty, or we've simply lost the passion for flying. Many have simply left. We've forgotten the need to prepare the next generation for the challenges ahead.

I was brought back to the group at Goose Bay by the chuckle of one of the pilots.

"I remember flying between Hawaii and Guam with Pop one night just before sunrise. We were making small talk, watching the clocks go around and making sure the distance to the next point was going down instead of up. The hiss of the high frequency radios was at a tolerable level for once. The smell of a cooking TV dinner drifted up from the galley. Then I noticed him looking at his watch every couple of minutes as if expecting something. I finally had to ask him, 'you got a date'?

"He looked at me with that easy smile and Virginia drawl of his and said, 'Na,' take a look,' as he pointed out the windshield. The first bright orange sliver of light was just breaking through the black horizon. 'The prettiest thing you ever want ta' see is just about ready,' he said. Then he just sat there—smiling like a kid. A Pacific painting was being created before our eyes. A smooth blue floor of ocean supporting giant white columns of clouds as far as you could see. They grew and changed shape while we watched. A faint white streak on the ocean pointed out a ship headed west. He pulled his seat all the way forward, folded his arms over the edge of the glareshield, and rested his chin on them. His eyes moved constantly —absorbing every image. We sat in silence for 20 minutes letting the beauty flow over us."

All the guys nodded and smiled. The captain playing the spoons earlier, chimed in.

"You ever watch him get ready to fly? The same way every time." He chopped one hand into the other to make the point.

"He sits down, opens his helmet bag, and pulls out the same stuff every time. He told me once, the first time we flew together I think, flying is nothing more than a series of events, done in succession, the same way every time. Nothing exciting or unpredictable. 'Where we all get into trouble,' he told me, 'is when we get out of our normal routines.' He then shook his head and laughed. You know though, standard procedure requires we read to each other the things we do every day and recite from memory the things we do every five years. He chuckled again. Nobody said it ALL makes sense."

The blond captain spoke up again. "I remember there were a few things that made Pop cringe more than a nasty letter from the IRS. He hated laziness. There was a right way and a wrong way to fly, and he couldn't stand anyone taking shortcuts just because it was easier. He also hated those guys that bounce you all over the cockpit while taxiing. The ones that *drive* the airplane like it was either a '56 Ford with a bad transmission or the Queen Mary. First they use enough power to move a ship away from a dock; then when they approach the turns, they spin the tiller as fast as possible and are oblivious to it all, while everyone else in the plane holds on for dear life."

We all laughed at the memory. "I guess the thing Pop loved the most was just flying the airplane . . . moving the wheel, fine-tuning everything so it did just what he wanted. He told me once he never understood people he'd flown with who couldn't wait to get the autopilot on as soon as possible. He said, 'hell that's why we're pilots, to fly airplanes. Oh sure, there are times to use the thing, but don't ever forget why we're in the airplane'."

The spoon man spoke again, "You know he felt the same way about all these electronic gadgets popping up in the cockpit. He thought they were great tools but didn't come close to replacing the pilots. He lived by the rule—until the 'boxes' can sit next to us at a hearing, they don't replace us."

Pop learned his skills from plying his trade on the long and short haul routes of the world, day in and day out. He knew he hadn't learned everything there was to learn about flying. He just looked and listened and tried to always get better. But he passed what he knew unselfishly and easily. Pop has been gone a year now, but I still wait for him to walk up to me in the squadron with an easy smile and tales of flights past.

I still have his habit of always looking up whenever an airplane passes overhead. I don't know who will pass on all the things he shared with me, but everyone needs a hero and Pop was mine.

Mr. Dillman, a frequent winner and contributor to the writing contest, is an MD-80 Captain with American Airlines.

Realistic Training and Rejected Takeoffs

(Editor's Comment: Although much of the information provided in the following article was obtained from civilian airline testing and many of the examples refer to the airline industry, application to MAC is clear. In these times of reduced budgets, realistic training within the bounds of safe operation, should be one of our primary concerns.)

Representative mishap statistics indicate that approximately 70 percent of air carrier mishaps are human-factor-oriented. It's an accepted fact that the human factor is quite often responsible for, or at least contributory to, the escalation of an occurrence into an incident, or an incident into a mishap. This is particularly true in the area of rejected takeoffs. One study shows that in 25 rejected takeoffs, three of them result in an incident while 1 in 25 result in a mishap.

Unfortunately, there are many cases where the crew did not select the correct procedure for the given situation (i.e., they made a poor decision). The problem is often compounded by subsequently failing to carry out even the wrong procedure correctly. It is also true that when the correct procedure is chosen, it to, is often incorrectly carried out. When something goes wrong at or near V1 speed, there is very little time for decision-making and proper execution of that decision. It is quite clear the consequences of an improperly executed rejected takeoff can be most serious and, in some cases, disastrous.

One of the reasons these problems arise is due to the unexpected nature (to the crew) of the occurrence, along with an unfamiliar stimulus being applied to the crew; that is to say, a different reason

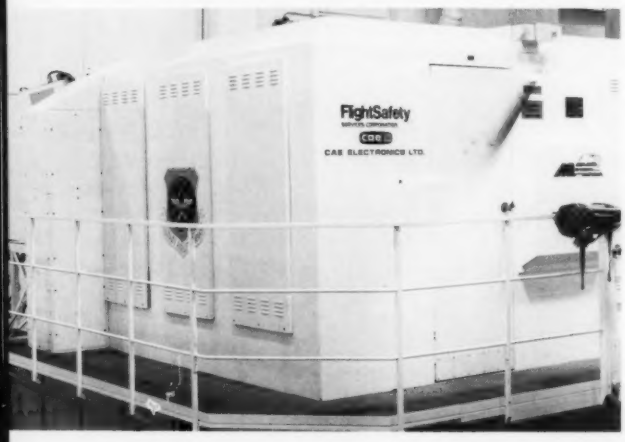
occurring for rejecting a takeoff, for example, than what the crew is used to in their stereotyped, rejected takeoff training exercises.

In general, the accident rate has been holding relatively level after many previous years of significant improvement. Mechanical failures, bad weather, etc., used to be the prime mishap causal factors, with human factors much less prominent than today. Over the years, especially with the advent of jet aircraft, the equipment has become much more reliable. This improvement has not been matched by similar improvement in crew performance, although there have been significant advances in training programs and available training technology. While it is agreed that many improvements were made in training programs, training still remains a very fertile area where much more improvement can be made. The area of rejected takeoffs is a good example.

With improved reliability of our airplanes and improvement in training techniques, one might have expected mishap rates to continue on a steady decline. However, in spite of improvements, results have not been what they perhaps should have been. Here are some possible explanations:

Today, the overall experience level of flight crews is undergoing a decline. Years ago, with loss of oil, blown cylinders, and feathered propellers commonplace, flying was quite adventuresome. These factors, along with flying through weather instead of over it, combined to provide crews with a great deal of experience in dealing with abnormal situations. Virtually every hour of flight time was an hour of gainful experience.

With respect to rejected takeoffs, the improbability of experiencing one is quite significant. A Boeing study indicates odds for a rejected takeoff are now such that, during a 25-year career, only one crew in 14 will experience a rejected takeoff at or near V1.



Now, the question is, how do we effectively train crews to properly react to this improbability when it does occur? In spite of some benefits derived from preprogrammed training, there are some very serious drawbacks. While standardization is enhanced and nothing considered "important" left out, by the very nature of this type of training, many flight crews tend to be *psychologically conditioned against the unexpected.* The simulator syllabus is rigidly adhered to, with no deviations (at least in the airline industry). The student has known for a week or more that today he will have a hot start due to a fuel control problem and that the first takeoff will be rejected due to a flameout of an engine at a certain airspeed, and that on the next takeoff, he will experience an engine fire after rotation. When the checkride is administered, for the most part, it too follows a rigidly-adhered-to sequence. "No surprises" is the watchword.

When you couple this kind of training philosophy with extremely reliable airplanes, is it reasonable to expect flight crews to react correctly in the real world when suddenly all the tires on the right side blow at V1 minus 10 knots, or V1, or even V1 plus 5 knots? Is this a logical conclusion when they have never been properly trained for that particular occurrence or even a similar one? Anyway, it wasn't on the program for that day, was it? Because, had it been, they would have been briefed on it and *then* they would have been prepared. In order for flight crews to be better prepared, training must improve to provide above all, *realism.* Additionally, checkrides must truly validate training effectiveness and not just fill another block in the pilot's record.

Let me provide an example of what we mean when we refer to the need for realistic training. Some time ago, we reviewed a 10-year history of Douglas DC-8, DC-9, and DC-10 aircraft rejected takeoffs. We found that approximately 75 percent of those resulting in mishaps or incidents were initiated by either gear/tire problems or engine problems, with the other 25 percent due to a variety of other factors.

Further, we determined that with the 75 percent, the incidence of engine problems and gear problems were just about evenly divided. A deeper look showed us that when *all* rejected takeoffs were considered—not just those resulting in incidents or accidents—rejected takeoffs initiated due to gear problems were approximately four times more likely to result in an accident or incident than were those initiated because of engine problems. Takeoff performance with respect to the powerplant is predicated and calculated upon loss of the most critical engine being recognized prior to, or at, V1. Takeoff performance

with respect to tires, wheels, and brakes, however, is calculated from the same V1 but with stopping distance predicated on all wheels, tires, and brakes being in good working order, in addition to the runway surface providing good braking capability.

The significance of this with respect to training is that virtually all airlines in the world do a creditable job training their crews to recognize and cope with engine problems during takeoff. On the other hand, very few training programs *adequately* address the tire, wheel, or brake problem. Douglas expended a lot of effort to solve this problem and, to that end, has developed in their motion-based simulator, the capability of providing realistic training in the recognition and handling of tire failure problems during takeoff roll for both DC-10 and MD-80 aircraft.

One important factor in a rejected takeoff is the initial decision as to whether or not to perform the rejected takeoff. Recent guidance to Douglas flight crews regarding rejected takeoffs at or near V1 has focused on urging the Captain to consider the reject option, within V1 minus 20 knots, only for an engine failure or for a condition that would clearly render the aircraft unflyable. Other than for an unflyable situation, this is particularly applicable to the heavy gross weight limited runway case. Rapid recognition of the problem is, of course, essential.

Unfortunately, in certain cases, an unusual situation is further confused by the inability of the crew to quickly and accurately identify the problem. A crew needs timely and accurate information in order to make an intelligent decision and be effectively trained to carry it out properly.

In some airplanes, failure of particular tires may result in such severe cockpit vibrations that the engine instruments can become unreadable. In one such example, the First Officer was making the takeoff when they lost a tire. The Captain took over and performed an unsuccessful rejected takeoff after V1; the aircraft went off the end of the runway into the water. In later discussion with the First Officer, he stated he was in full accord with the Captain's decision, even though he knew the rejected takeoff would probably be unsuccessful. In his words, "I had no idea what was wrong and felt I would rather be in the water than in the air with an unknown problem."

In hindsight, continuing the takeoff would have been the better choice. Realistic training in this area might have resulted in the correct decision. One can hardly blame crews for faulty decisions if we don't provide effective training in the area in question.

Another aspect of rejected takeoffs needing to be continually emphasized, is the necessity for the crew to apply maximum brake pedal pressure to enable the antiskid to operate most effectively in providing maximum decelerative forces. In addition, crews need to realize they must maintain full brake pressure to a *complete stop.*

Several years ago, Douglas conducted a study in their engineering development simulator using a visual system which was programmed with realistic ground effect, the feel of deceleration, and antiskid cycling and performance. FAA and airline pilots as well as Douglas pilots participated. The study indicated pilots generally do not achieve full brake pedal deflection on their first attempt to perform a rejected takeoff. Also, as speed decreases below 80 knots, there may be a perception that speed is much lower than actual and that the airplane will surely stop on the remaining amount of runway. At this point, there is a tendency to let up slightly on the brakes, or start coming out of reverse thrust, perhaps by force of habit. The obvious result during evaluations was that, with a wet runway, some pilots went off the end—much to their surprise and chagrin. Faced with a real life situation of similar nature in the future, pilots who have had this experience in the simulator will *not* let up on the brakes prematurely.

To help provide more realistic training for this situation, Douglas installed an indicator on the simulator instructor's panel which showed the percentage of maximum brake pedal force being applied by the student. It was found that typically, pilots applied only approximately 70 percent of maximum force on their first attempt. With a minimum of additional training, however, they were able to consistently achieve maximum braking.

In summary, all training must be improved. We need to make it as realistic as possible, using all available tools. Added emphasis is needed on the seriousness of tire problems, how to recognize them, and on the exact procedures required to successfully perform a rejected takeoff. Crews should be encouraged to mentally prepare for a rejected takeoff near VI every time they take the active runway. They also need practice and training in situations which force a decision-making process in the critical go or no/go area at or near V1 speed. It is up to us to provide the training required at a level of realism commensurate with the transfer of the experience to the airplane as close to 100 percent as we are capable of. We owe this to the flight crews and passengers of the world. ★

Adapted from a presentation to the 40th Annual International Air Safety Seminar by J. S. Clauzel, Chief Pilot, Douglas Aircraft Company, McDonnell Douglas Corporation.

C.R. TERROR

A Lesson in Hydraulics

"It's about time," sighed the Ace of Aerospace as he screeched his Kelly Green E-type Jag to a dusty stop in front of the squadron. "Finally made me an instructor in the world's largest aerospace vehicle. The headquarters weenies couldn't allow The Great One to waste away at some rated sup job any longer."

The World's Greatest Manipulator of Wires and Tires bounced into the squadron and placed his hand-tooled, baby-blue, leather briefcase in the briefing cubicle. "First things first," bantered C.R., his priorities unchanged despite the much-slimmed physique. "Flight kitchen," blurted the Skyways Sultan,"two frozen filet mignon dinners to go.

"Now, if I can just locate my junior Jumbo drivers," muttered C.R.

"Sir, we're your new students. I'm Lt. Sideburns and this is Capt. Max Fastburner," volunteered a tall, tanned, silver bar.

"You realize," C.R. revealed, "that few fledgling fliers have the opportunity to aviate with the Master Masseur of MACdom. Enough needless chitchat m'lads; grab a fat pill and let's depart these hallowed halls for that big 'See Five' out there."

"But Sir, aren't we supposed

to have a briefing?" prompted Sideburns.

Fastburner added, "I figured a TOLD card and answered most of the questions in the study guide, but I'm still confused about . . . ."

"M' boy," interrupted C.R., "all that nuts 'n bolts stuff was covered at the University of MAC. It's all nice to know, but just leave the flying part to your Able Aeronaut."

Slurping his frosty cola as the crew van bounced along the ramp, C.R. prophesied, "Blast off at 1300, around the flag pole till 1700, back for a hot date with Tassels by 1715." The crew van jolted to a stop beneath the crew entrance door of the Lockheed Leviathan.

"Okay gang, let's climb aboard. 'Tis time to slip those surly bonds," directed the Magic Major. Sideburns strapped in as C.R. glanced over the forms and set up the radios.

Sergeant Torque quickly thumped his way up the crew entrance ladder and gasped, "Sir, we've got a slight hydraulic leak in No. 1 service center and I think the hydraulic shop ought to have a look at it."

"Don't sweat the small stuff," chided the Master Manipulator. "We've got three other systems, PTUs, ATMs, boost pumps, APUs, ABCs, and XYZs on this here Galloping Galaxy. Your Able Aviator of Aerospace was makin' turbulence long before those scientific strap-hangers dreamed up all that hydraulic Mickey Mouse equipment. Now, let's strap in and wind up this bug sucker before those sleek-winged biz jets clutter up the pattern," growled the Global Galaxy Grappler.

A half hour later the four TF-39 engines howled as Sideburns, sweat cascading off his forehead, advanced the go-levers to takeoff EPR and released brakes. The Giant Jumbo Jet quickly responded to the thrust.

"Go," bellowed the Bald One.

Sideburns abruptly rotated the big bird skyward and stuttered, "Ggggear up."

"Gear up," acknowledged C.R. "Gotta speak up, m' boy, if you wanna follow in the footsteps of your Intrepid Instructor."

Passing 100 feet, C.R. chopped No. 1 throttle. "Okay, m' lad, gimme a partial flap, engine out, ILS emergency return."

With sweat-astreamin' and a strangle hold on the yoke, Sideburns nervously responded by turning the huge Jumbo to a 120-degree radar vector.

"Sir, I don't believe the MAC-SUP allows all this at this low an altitude," pleaded Fastburner.

"Not applicable to us senior Jumbo drivers. All those MAC-SUPs and such are for the FNGs in the squadron," answered the World's Greatest.

Fastburner, a former C-141 instructor, occupied the jump seat. He gazed in bewilderment.

"Copilot," called the engineer, "Sir, we're slowly losing hydraulic pressure and quantity in system 1."

"We're what?" stammered C.R.

"System one pressure and quantity are decreasing," explained Sergeant Torque.

"No sweat," reassured C.R. "Let's get all that B. F. Goodyear into the slip stream before we have to call the world and spend the rest of the day going through gear lowering emergency procedures and filling out paperwork."

"Sir, you want to take the bird?" asked Sideburns.

"Naw, you're doin' fine and besides, we gotta get this mission complete and fill the square. Press on with the simulated three-engine approach to a touch 'n go."

"Don't you mean full stop?" prompted Sergeant Torque. "We should have maintenance take care of this hydraulic problem right away, Sir, before it snowballs into something big."

"No need. Everything is under control and an air abort would mean a big hassle with the wing weenies and maintenance troops. The wing commander is counting on me to get the mission accomplished and I'm going to show him that your Capable 'Craft Commander can hack it. We'll finish out our 'four hours' and brief the command post and maintenance just before our termination landing," promised the Pompous Pilot.

"Okay, Sir, but we should run a hydraulic loss checklist," muttered Sergeant Torque.

"What for?" asked C.R. "We've got green wheels and the backup system's got all the other goodies covered. Let's get with the program and get a few crashes and dashes," implored the Dauntless Driver.

Sideburns acknowledged the downwind vector, gently banking the Jumbo to a 170-degree heading.

"How about a checklist, m' boy," challenged C.R.

"Yessir, gear down, before landing checklist," announced the young lieutenant.

"Looks like everything's up tight; green wheels, flaps 40. Now just follow the vectors from your friendly scope dope, center the bulls-eye, and grease 'er on, m' lad," directed the Dandy Driver.

Fastburner interrupted, "Sir, what about selecting emergency nose wheel steering? We lost the normal mode when system one failed and . . . ."

"Can't you see I'm busy learnin' the young lad his levers and landings?!" roared C.R. to a cringing Fastburner.

The bulls-eye danced merrily about the attitude indicator as Sideburns struggled to maintain some semblance of an ILS final.

"Hundred above—land!" wailed the Eighth Wonder of the World.

Sideburns yanked the yoke back, chopped the throttles, and the stately C-5 slammed onto the runway, immediately veering off centerline in the direction of the base golf course.

"Get on the rudder pedal steering!" shouted C.R.

"But Sir, I've got full left rudder in," responded the terrified lieutenant.

"I've got it," commanded the Inept Instructor.

By then it was too late as the Jumbo quickly decelerated and settled up to its wheel hubs in the No. 3 green.

All was quiet. Sideburns looked at Fastburner, who looked at C.R., who rolled his head back and slapped a clammy palm to his forehead.

Fastburner broke the silence. "Major Terror, the nose gear steering is still in normal. I tried to tell you earlier, but . . . ."

"Ugghhh," moaned the Rattled Rollicker of Runways, realizing what he was in for. The strain of events was clearly embossed on his face.

"I know this probably isn't the time to say it, but I don't think we should have taken off with a hydraulic problem. That's what caused us to run off the runway," Fastburner offered as C.R. sat staring blankly out of the cockpit. "Also, our simulated engine failure at 100 feet was clearly illegal. There was no briefing, and you ignored the engineer when . . . ."

C.R. bolted upright in his seat, a familiar gleam in his eyes.

"Nevermind, m' boy. I realize fully that you're new in the airplane and I'll protect both of you as well as I can. Done it many times in my day, so not to worry."

Fastburner's mouth dropped open and Sideburns dropped his headset, but the Ace of Alibis was already bobbling down the crew entrance ladder to meet the emergency vehicles. A dark blue staff car was a few yards behind.

"Major Terror," barked the gentleman with a star on each shoulder, "you're grounded as of right now. Report to my office in ten minutes."

"Yessir," replied the Beset Bird Bender, his shoulders drooping.

As he boarded the hospital van, C.R. glanced at Sideburns and mumbled, almost beneath his breath, "This'll blow over in a month or so and I'll once again dance the skies on my laughter-silvered wings."

Sideburns' zombie-like eyes remained fixed straight ahead as C.R. flipped through his emerald-green pigskin wallet. The Avoirdupois Aviator finally sighed with relief, "Ah, here it is. Tassel's phone number.

QUICKSTOPPERS

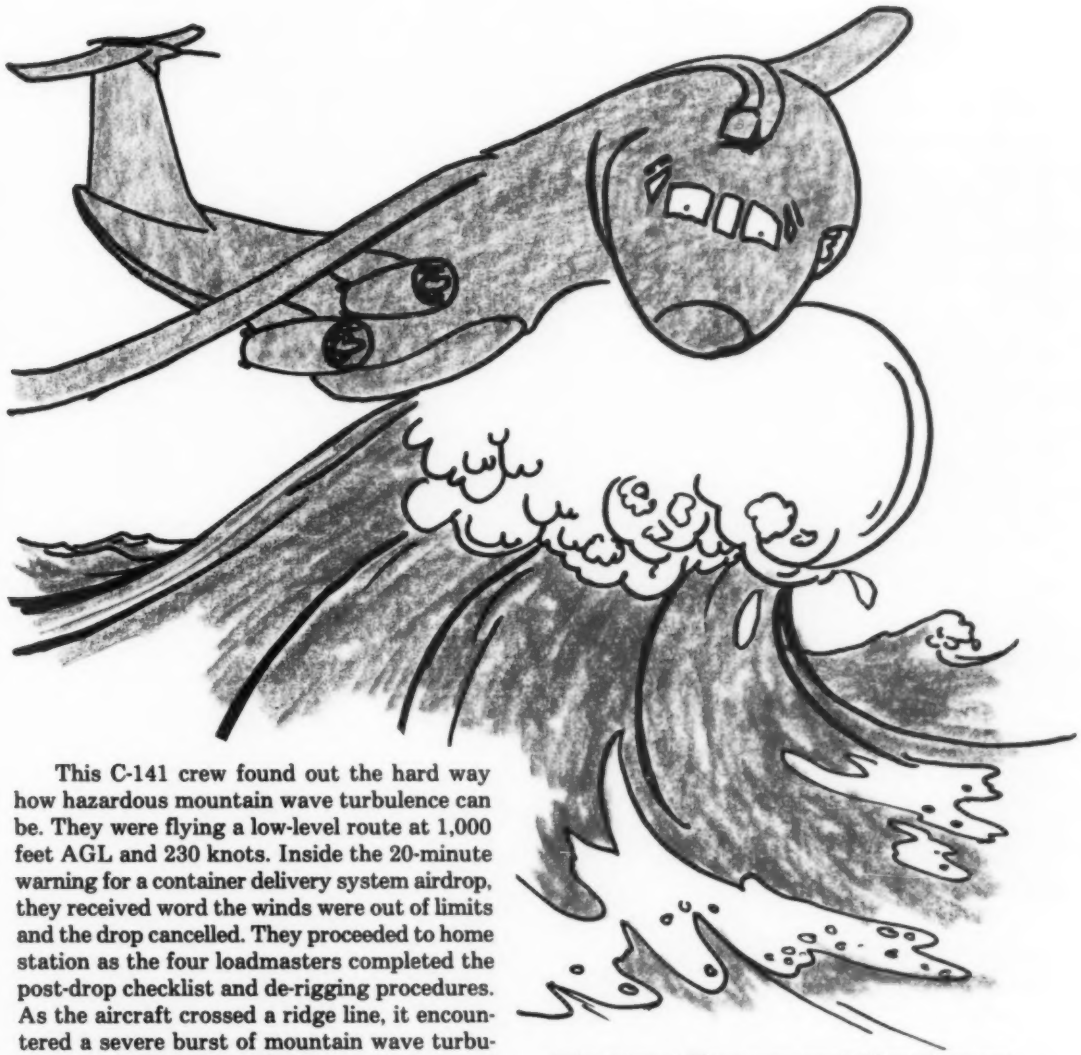
Even Though You Think You're Cured . . .

The flight to home station was uneventful for a C-130 crew until time came for descent into an en route stop. One of the two navigators on board was having trouble clearing his ears. Finally, at 1,200 feet AGL, the ear cleared so the airman neglected to notify anyone of his problem. Two hours later he experienced severe ear pain and reported to a Navy flight surgeon who gave him a decongestant and pain medicine, and grounded him. The next day he could easily clear his ears and was released to fly. Four days later he reported to a local flight surgeon complaining of an earache and sore throat. The flight surgeon diagnosed a mild cold and ear block of the right ear. He was given an antibiotic and placed on DNIF status. Obviously, it's not over till it's over.

Sick of Flying—A New Twist

This unfortunate individual was scheduled as a third medical technician on a four-hour local aeromed trainer. Six hours prior to takeoff, he demonstrated flu-like symptoms of vomiting, nausea, and diarrhea. After the initial symptoms passed he thought he felt good enough to fly. Mistake! One hour after takeoff on a two-hour leg to a nearby base, his problems returned. He was given oxygen, tylenol, and antacid, and placed on a litter for the rest of the flight. The pilot was not notified until 30 minutes from home station on the final leg of the day. He requested a direct shot home where medical folks met the aircraft and took charge of the ailing airman. He was diagnosed as being severely dehydrated. Cause of the incident? The technician failed to tell his supervisors he was sick, and flew in a diminished capacity. After all the publicity this brand of activity gets, you would think people would start listening.

Mountain Wave Turbulence

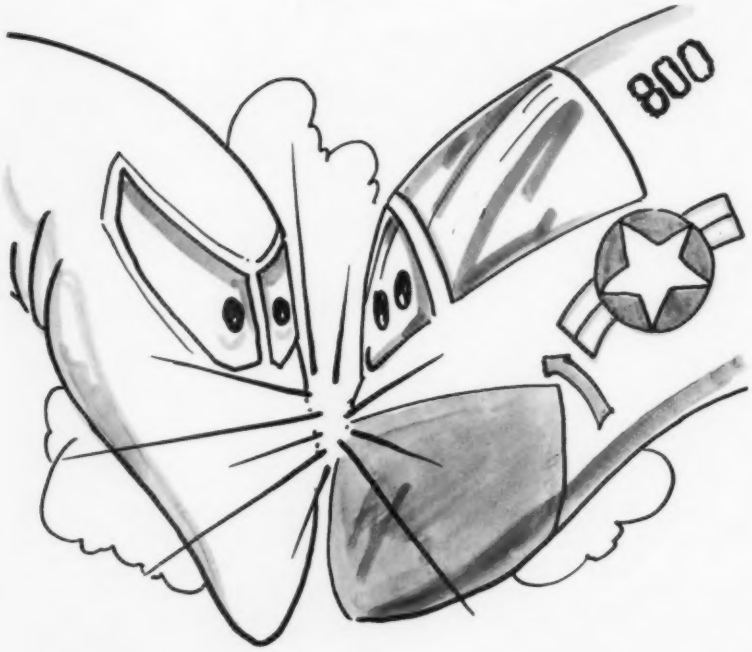


This C-141 crew found out the hard way how hazardous mountain wave turbulence can be. They were flying a low-level route at 1,000 feet AGL and 230 knots. Inside the 20-minute warning for a container delivery system airdrop, they received word the winds were out of limits and the drop cancelled. They proceeded to home station as the four loadmasters completed the post-drop checklist and de-rigging procedures. As the aircraft crossed a ridge line, it encountered a severe burst of mountain wave turbulence. A loadmaster called "man down" and requested a higher altitude. The pilot directed a climb to 12,500 feet MSL and received word that one loadmaster had an injured arm, one had a bloody nose, another had an injured back, and the fourth had a bruised hip. Medical folks met the plane when it landed and took charge of the injured. They were treated for minor contusions, abrasions, lacerations, and lower back strain. All returned to flight status within 48 hours with the exception of the back strain, and he was flying within two weeks. Where weather is concerned, it's always wise to expect the unexpected.

Crosswind? What Crosswind?

The solo cross-country flight for this Cessna 172 student pilot was uneventful until time came for the all-important landing. He radioed the local UNICOM ten miles out for landing instructions but got no answer. Instead, he received a report from an unidentified aircraft that the active runway was 30 with winds 320/10-15. The student pilot set up for a normal landing, put the bird on the ground and, at about 60-65 mph, neutralized the controls. The left wing lifted and the tail pitched up causing the right wing tip and propeller to contact the runway. Damage consisted of bent propeller tips and a bent and scraped right wing tip. Investigation revealed the actual winds were 220/10-15 rather than 320/10-15 as reported by the phantom aircraft. Sometimes you just don't know who you can trust.

No! The Other Left Downwind



With two aircraft operating in the area, the crew of this C-21 had just completed a touch-and-go when the IP observed a Navy S-3 crossing the departure end of the runway at around 600 feet AGL. The C-21 leveled off between 150 and 200 feet as the S-3 entered a right downwind. When the S-3 reported the field in sight, approach cleared him for a visual approach to enter left downwind. The S-3 contacted tower and reported eight miles for a visual straight-in. Tower told them to report established on left downwind for the runway in use. At this point the S-3 crossed the end of the runway to enter **right** downwind. There would have been no conflict had the S-3 been at the traffic pattern altitude of 2,000 feet MSL or on left downwind. The big sky becomes mighty small when we disregard instructions.

After Deadlines

ONE MORE FAREWELL--We bid goodby to one more member of our family. Maj. Stephen E. Behr, who joined *TMF* in May 1989, leaves to assume duties as Chief, Information Resources Management and Operations Division, HQ MAC/IM. Steve came to us from the 375 MAW, where he served as Deputy Chief of Safety and Chief of Flight Safety. While assigned to the 375th, Steve flew C-21s. He also has flight time in T-39s, C-140s, and C-141s. We at *TMF* will miss his expertise, hard work, and dedication to the magazine. Good luck Steve!

. . . AND A WELCOME--to our new Director of Safety, Col. Chester H. Mauchline who replaces Col. Thomas M. James, who retired. Prior to heading the HQ MAC Safety staff, Colonel Mauchline was the Deputy Commander for Operations, 317 TAW, Pope AFB. NC. Colonel Mauchline, born in Washington, PA., graduated from the University of New Mexico and was commissioned in 1968. After graduating from pilot training in Texas, Colonel Mauchline's various assignments took him to Clark AB, Dyess, Maxwell, Little Rock, and Scott. He is a command pilot with over 3,300 flying hours. Welcome aboard, sir.

TECHNICIANS RECEIVE C-17 MAINTENANCE TRAINING--The first group of technicians scheduled to receive C-17 maintenance training attended a two-week course on aircraft systems knowledge at Edwards AFB, CA. They then travelled to Douglas Aircraft Company at Long Beach, CA., for factory hands-on training. The crew chiefs, MSgt. Bruce Stufflebeam, TSgts. John Danko and Bob Ellison, and SSgt. John Macko are assigned to the 315 AGS (Assoc) at Charleston AFB, SC. They are the first of an initial cadre of active duty, civilian, and reserve maintainers to be trained as evaluators and certifiers.

★ U.S. GOVERNMENT PRINTING OFFICE: 1991-554-015/40010

41 ARS H-3 standing off Eastern Space and Missile Center